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EXAMINER

HINZE, LEO T

ART UNIT PAPER NUMBER

2854

DATE MAILED: 02/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/933,320

Applicant(s)

MICHAELIS, A. JOHN

Examiner

Leo T. Hinze

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-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 August 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2,3. 6) ☐ Other: _____

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DETAILED ACTION

Claim Objections

1. Claims 35 and 36 are objected to because of the following informalities: there is no period at the end of the claim.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 16 and 28-30 are rejected under 35 U.S.C. 102(b) as being anticipated by Sheridan, US 4,126,854.

Regarding claim 16, Sheridan teaches a method of imaging electronic paper, the method comprising the steps of: providing a focused light source (col. 7, lines 20-21) structured to emit a light beam; positioning a back plane electrode layer (10', Fig. 7) in front of the focused light source; positioning an electrostatic display cell layer (4, Fig. 7) between the back plane electrode layer and the focused light source; positioning a photoconductive layer (60, Fig. 7) between the electrostatic display cell layer and the focused light source; positioning a front plane electrode (12', Fig. 7) layer between the photoconductive layer and the focused light source, the front

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plane electrode layer being transparent to the light beam; generating an electrical potential between the front plane electrode layer and the back plane electrode layer; and emitting the light beam from the focused light source while the electrical potential between the front plane electrode layer and the back plane electrode layer is being generated (col. 7, lines 16-25).

Regarding claim 28, Sheridan also teaches wherein the step of positioning an electrostatic display cell layer comprises the step of positioning a layer of translucent enclosures, each translucent enclosure containing a fluid and an electrically charged material (col. 3, lines 35-46).

Regarding claim 29, Sheridan also teaches wherein the step of positioning an electrostatic display cell layer comprises the step of positioning a layer of spheres, each sphere being captured in a translucent cell such that each sphere is freely rotatable within the translucent cell, each sphere having one color on the front of the sphere and another color on the back of the sphere, each sphere being electrostatically charged with a charge of one polarity on the front of the sphere and a charge of another polarity on the back of the sphere (col. 3, line 35 col. 4 -46).

Regarding claim 30, Sheridan also teaches wherein the step of positioning a front plane electrode layer comprises the step of positioning a front plane electrode layer which is transparent to visible light ("conductor 10' of optically transparent material", col. 3, lines 32-33).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior

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art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1 and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sheridan.

Sheridan teaches:

- a method of imaging electronic paper, the method comprising the steps of: providing a focused light source (col. 7, lines 20-21) structured to emit a light beam; positioning a back plane electrode layer (10', Fig. 7) in front of the focused light source; positioning an electrostatic display cell layer (4, Fig. 7) between the back plane electrode layer and the focused light source; positioning a photoconductive layer (60, Fig. 7) between the electrostatic display cell layer and the focused light source; positioning a front plane electrode (12', Fig. 7) layer between the photoconductive layer and the focused light source, the front plane electrode layer being transparent to the light beam; generating an electrical potential between the front plane electrode layer and the back plane electrode layer; and emitting the light beam from the focused light source while the electrical potential between the front plane electrode layer and the back plane electrode layer is being generated (col. 7, lines 16-25) (claim 1);
- wherein the step of positioning an electrostatic display cell layer comprises the step of positioning a layer of translucent enclosures, each translucent enclosure containing a fluid and an electrically charged material (col. 3, lines 35-46) (claim 13);

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- wherein the step of positioning an electrostatic display cell layer comprises the step of positioning a layer of spheres, each sphere being captured in a translucent cell such that each sphere is freely rotatable within the translucent cell, each sphere having one color on the front of the sphere and another color on the back of the sphere, each sphere being electrostatically charged with a charge of one polarity on the front of the sphere and a charge of another polarity on the back of the sphere (col. 3, lines 35-46) (claim 14);
- wherein the step of positioning a front plane electrode layer comprises the step of positioning a front plane electrode layer which is transparent to visible light (“conductor 10’ of optically transparent material”, col. 3, lines 32-33) (claim 15).

Sheridon does not teach positioning a photoconductive layer between the back plane electrode layer and the focused light source (claim 1).

It has been held that rearrangement of parts is not sufficient by itself to patentably distinguish over the prior art. See MPEP §2144.04.

Regarding claim 1, it would have been obvious to one having ordinary skill in the art to modify Sheridan to place a photoconductive layer between the back plane and the light source, as such a rearrangement of parts would not affect the operation of the apparatus, and one having ordinary skill would recognize the advantage of such an arrangement, such as the photoconductive layer no longer being required to be optically transparent.

Regarding claims 13-15, the modification of Sheridan teaches all that is claimed as discussed above.

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6. Claims 2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sheridan in view of Koshimizu et al., US 5,566,012.

Sheridon teaches all that is claimed as discussed in the rejection of claim 1 above.

Sheridon does not teach:

- stepping the focused light source across the electronic paper (claim 2);
- providing a focused light source comprises the step of providing a laser device (claim 4).

Koshimizu teaches:

- an optically addressed display device, including a laser (16, 22, Fig. 4) which scans (col. 8, lines 21-22) a light modulating element (1, Fig. 3) through a photoconductive element (2, Fig. 3), thereby forming a static image;
- that such a system is advantageous for creating a high-speed display which is clear and easy to read, thereby increasing the comfort of the user (col. 1, lines 49-51, lines 55-56).

Regarding claims 2 and 4, it would have been obvious to one having ordinary skill in the art to modify Sheridan to use a laser as the light source, and to scan the light source across the paper, because Koshimizu teaches that such a system is advantageous for creating a high-speed display which is clear and easy to read, thereby increasing the comfort of the user.

7. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sheridan in view of Wen et al., US 6,064,410.

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Sheridon teaches all that is claimed as discussed in the rejection of claim 1 above, except stepping advancing the electronic paper line by line.

Wen teaches printing on an electronically addressable medium, including moving the medium (50, Fig. 1) past the printhead (40, Fig. 1).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Sheridan to advance the electronic paper line by line, because Wen teaches that such a method is well known in the art, and one having ordinary skill in the art would recognize the advantages of such a method, including reduced cost, as a mechanism to move the electronic paper past a stationary printhead would not need to be as complicated or as expensive as one to move a printhead over a stationary piece of electronic paper.

8. Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sheridan in view of Mydlarz et al., US 6,518,009 B1.

Sheridan teaches all that is claimed as discussed in the rejection of claim 1 above, except wherein the step of providing a focused light source comprises the step of providing an invisible ray source (claim 5), a light source containing infrared light (claim 6), or a light source containing ultraviolet light (claim 7).

Mydlarz teaches that ultraviolet, visible and infrared regions of the electromagnetic spectrum as supplied by beams from light emitting diodes or lasers are all acceptable alternatives for exposing a photocopying element.

Regarding claims 5-7, it would it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Sheridan to use invisible, infrared,

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ultraviolet, and/or LED lights as the light source, because Mydlarz teaches that these are all well-known, acceptable alternatives in the art.

9. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sheridan in view of Richley, US 5,900,858.

Sheridon teaches all that is claimed as discussed in the rejection of claim 1 above, except wherein the step of positioning a back plane electrode layer comprises the step of positioning a white back plane electrode layer.

Richley teaches a twisting ball display (10, Fig. 1) which can have a white background sheet (col. 1, lines 35-37).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Sheridan to use a white background sheet, because Richley teaches that a white background sheet for a twisting ball display is well-known in the art, and one having ordinary skill would recognize the advantages of a white background sheet, such as high contrast and ease of reading when using black text.

10. Claims 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sheridan in view of Nakamura et al., US 5,478,684.

Sheridon teaches all that is claimed as discussed in the rejection of claim 1 above, except wherein the step of positioning a photoconductive layer comprises the step of positioning a selenium layer (claim 9), a layer of photoconductive silicon (claim 10), a layer of cadmium sulfide (claim 11), or an organic photoconductor (claim 12).

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Nakamura et al. teaches that conventional photoconductor materials for use in reproducing images can be made from selenium, cadmium sulfides, silicon, and organic photoconductive materials (col. 1, lines 13-16).

Regarding claims 9-12, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Sheridan to use the claimed materials for the photoconducting layer, because Nakamura teaches that these are all acceptable photoconducting materials which are well-known, acceptable alternatives in the art.

11. Claims 17, 19, 31-32, and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sheridan in view of Koshimizu et al., US 5,566,012.

Sheridan teaches all that is claimed as discussed in the rejection of claim 16 above.

Sheridon also teaches an apparatus for imaging electronic paper, the apparatus comprising: a switchable voltage source; a front plane electrode electrically connected to the switchable voltage source; a back plane electrode electrically connected to the switchable voltage source; a focused light source positioned to emit a light on each of a plurality of selected locations of the front plane electrode (Claim 31).

Sheridon does not teach:

- stepping the focused light source across the electronic paper (claim 17);
- providing a focused light source comprises the step of providing a laser device (claims 19 and 32);
- a controller operatively coupled to the switchable voltage source and the focused light source, the controller causing the switchable voltage source to produce an

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electrical potential between the front plane electrode layer and the back plane electrode layer, the controller causing the focused light source to emit the light beam from the focused light source while the electrical potential between the front plane electrode layer and the back plane electrode layer is being generated (claim 31);

- wherein the focused light source comprises a modulated light source (claim 37).

Koshimizu teaches:

- an optically addressed display device, including a laser (16, 22, Fig. 4) which scans (col. 8, lines 21-22) a light modulating element (1, Fig. 3) through a photoconductive element (2, Fig. 3), thereby forming a static image;
- a control system (3, 20, Fig. 4) which controls the voltage applied to the electrodes (8, 11, Fig. 3) and the actuation of the laser;
- that such a system is advantageous for creating a high-speed display which is clear and easy to read, thereby increasing the comfort of the user (col. 1, lines 49-51, lines 55-56).

Regarding claims 17, 19, 31-32, and 37, it would have been obvious to one having ordinary skill in the art to modify Sheridan to use a laser as the light source, and to use a controller to control the movement of the laser and the coordination of the laser movement and voltage, because Koshimizu teaches that such a system is advantageous for creating a high-speed display which is clear and easy to read, thereby increasing the comfort of the user.

12. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sheridan in view of Wen et al., US 6,064,410.

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Sheridon teaches all that is claimed as discussed in the rejection of claim 16 above, except stepping advancing the electronic paper line by line.

Wen teaches printing on an electronically addressable medium, including moving the medium (50, Fig. 1) past the printhead (40, Fig. 1).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Sheridan to advance the electronic paper line by line, because Wen teaches that such a method is well known in the art, and one having ordinary skill in the art would recognize the advantages of such a method, including reduced cost, as a mechanism to move the electronic paper past a stationary printhead would not need to be as complicated or as expensive as one to move a printhead over a stationary piece of electronic paper.

13. Claim 20-22, and 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sheridan in view of Mydlarz et al., US 6,518,009 B1.

Sheridon teaches all that is claimed as discussed in the rejection of claim 16 above, except wherein the step of providing a focused light source comprises the step of providing an invisible ray source (claim 20), a light source containing infrared light (claim 21 and 33), or a light source containing ultraviolet light (claim 22 and 34) or a light emitting diode array (claim 35).

Mydlarz teaches that ultraviolet, visible and infrared regions of the electromagnetic spectrum as supplied by beams from light emitting diodes or lasers are all acceptable alternatives for exposing a photocopying element.

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Regarding claims 20-22, and 33-35, it would it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Sheridan to use invisible, infrared, ultraviolet, and/or LED lights as the light source, because Mydlarz teaches that these are all well-known, acceptable alternatives in the art.

14. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sheridan in view of Richley, US 5,900,858.

Sheridon teaches all that is claimed as discussed in the rejection of claim 16 above, except wherein the step of positioning a back plane electrode layer comprises the step of positioning a white back plane electrode layer.

Richley teaches a twisting ball display (10, Fig. 1) which can have a white background sheet (col. 1, lines 35-37).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Sheridan to use a white background sheet, because Richley teaches that a white background sheet for a twisting ball display is well-known in the art, and one having ordinary skill would recognize the advantages of a white background sheet, such as high contrast and ease of reading when using black text.

15. Claims 24-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sheridan in view of Nakamura et al., US 5,478,684.

Sheridon teaches all that is claimed as discussed in the rejection of claim 16 above, except wherein the step of positioning a photoconductive layer comprises the step of positioning

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a selenium layer (claim 24), a layer of photoconductive silicon (claim 25), a layer of cadmium sulfide (claim 26), or an organic photoconductor (claim 27).

Nakamura et al. teaches that conventional photoconductor materials for use in reproducing images can be made from selenium, cadmium sulfides, silicon, and organic photoconductive materials (col. 1, lines 13-16).

Regarding claims 24-27, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Sheridan to use the claimed materials for the photoconducting layer, because Nakamura teaches that these are all acceptable photoconducting materials which are well-known, acceptable alternatives in the art.

16. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sheridan in view of Koshimizu et al. as applied to claims 2, 4, 17, 19, 31-32, and 37 above, and further in view of Hooker et al., US 6,554,463.

The combination of Sheridan and Koshimizu teaches all that is claimed as discussed in the rejection of claim 31 above, except wherein the focused light source comprises a light emitting polymer array.

Hooker teaches that LED's, lasers, and light-emitting polymers (col. 2 lines 18-22) are all well-known, acceptable alternatives for outputting optical energy.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify Sheridan to use light emitting polymers, because Hooker teaches that light emitting polymers are well-known in the art for emitting radiant energy.

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17. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sheridan in view of Koshimizu et al. as applied to claims 2, 4, 17, 19, 31-32, and 37 above, and further in view of Yoshikawa et al., US 4,381,408.

The combination of Sheridan and Koshimizu teaches all that is claimed as discussed in the rejection of claim 31 above, except wherein the modulated light source comprises a liquid crystal display.

Yoshikawa teaches using light from a laser, LED, LCD, or the like (col. 1, lines 25-30) for radiating energy on a photoconductor for printing images.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify Sheridan to use a liquid crystal display, because Yoshikawa teaches that a liquid crystal display is a well-know source of radiant energy for activating a photoconducting device.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leo T. Hinze whose telephone number is 571-272-2167. The examiner can normally be reached on M-F 8:00-5:30.

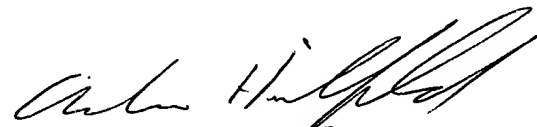
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Hirshfeld can be reached on (571) 272-2168. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

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may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Leo T. Hinze
Patent Examiner
AU 2854
3 February, 2004



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